REMARKS

Reconsideration of this application is requested. Claims 33-40 will be active in the application subsequent to entry of this Amendment.

The claims have been amended in order to more particularly point out and distinctly claim that which applicants regard as their invention.

Claim 30 has been withdrawn as directed to non-elected subject matter it being understood that this action is without prejudice to a divisional application directed to the subject matter of claim 30.

Claims 16-21, 29 and 32 have been revised and now appear as a new set of claims, claims 33-40. The claims have been revised to address the lack of clarity rejections stated in items 1 and 2 of the Official Action refining the description of the method of measuring conversion percentage of carbon monoxide to carbon dioxide and reformatting the claims. Previous claim 17 is replaced by new claim 34 and previous claim 18 is replaced in part by new claim 35 and specifies that the percentage conversion is 20% by volume. Previous claims 19-21 continue as new claims 36-38.

New independent claim 39 is directed to aggregates of the type specified in claim 19 and new claim 40, also directed to aggregates, further defines and includes preferred values for phosphorus sulfur and sodium, these preferred values given in the original description of the invention at page 20.

It is submitted that the above claims properly and clearly define the invention and are based upon original subject matter, thus no new matter is introduced. Withdrawal of the rejection in item 1 of the Official Action is solicited.

Applicants' claims are directed to an iron compound catalyst for inhibiting the generation of dioxin. Two different embodiments of the catalysts are disclosed.

The first is an iron compound catalyst consisting essentially of iron oxide particles, iron oxide hydroxide particles or mixture thereof and having not less than 15 %, preferably at least 20% (see claim 35), by volume of a conversion percentage of carbon monoxide into carbon dioxide measured by the defined method. The iron oxide or iron oxide hydroxide particles have an average particle size of 0.01 to 2.0 μm, a BET specific surface area of 0.2 to 200 m^2/g, a

phosphorus content of less than or equal to 0.02 % by weight, a sulfur content of less than or equal to 0.1 % by weight and a sodium content of less than or equal to 0.2 % by weight.

Also disclosed is an iron compound catalyst consisting essentially of **aggregates** composed of iron oxide particles, iron oxide hydroxide particles or a mixture of particles thereof, these particles having a specific surface area of not less than 1.0 m^2/cm^3 when measured under a feed pressure of 1 bar in a dry granulometer, and an average particle size (D_{50}) of 50 % of a total volume thereof, of up to 8.0 μm. They provide not less than 15 % by volume, preferably at least 20% (see claim 35), of a conversion percentage of carbon monoxide into carbon dioxide measured by the defined method.

The aggregates are composed of iron oxide particles or iron oxide hydroxide particles having the same characteristics as do the particles of the first embodiment.

One of the requirements of the iron compound catalyst of the invention, be they particles or aggregates, is that they are able to convert not less than 15 % by volume (of a conversion percentage) of carbon monoxide into carbon dioxide. As seen from the Comparative Examples 2 and 4 of applicants' specification (not according to the invention), the conversion percentage of carbon monoxide into carbon dioxide is less than 15 % by volume. For example, the conversion percentage of the goethite particles obtained in Comparative Example 2 is 10 % by volume. Such catalysts are inferior to those of the present invention as these inferior catalysts do not sufficiently inhibit the generation of dioxin. For example, the amount of dioxin generated in Comparative Example 4 is 18 $ngTEQ/Nm^3$.

The balance of the Official Action deals with a prior art-based rejection and applicants respond to same by pointing out that the differences between the content of the disclosure of the cited document relied upon and the claims of the present application taken together with comparative data included in the originally filed application as well as the attached evidentiary declaration of inventor Matsui made June 9, 2003.

US Patent No. 5,036,032 (Iglesia et al) discloses that certain catalytic metals for Fischer-Tropsch reactions "have been widely reported as cobalt, ruthenium, iron and nickel" (see column 4, lines 19 to 21); and that cobalt metal is supported on a carrier (line 28, same column) and, generally, inorganic refractory oxides are employed as supports, and preferred supports are silica, magnesia, alumina, silica-alumina, and titania and of these, supports having an increasing

surface area are preferred relative to supports of lower surface area because the higher surface area supports stabilize higher CO dispersions (see column 4, lines 38 to 44).

In addition, Iglesia et al disclose the "surface areas range from 50-500m^2/g" (column 4, lines 50-51) which is a surface area range of the supports.

The Office Action argues that Iglesia et al disclose "60-65 % CO conversion (see column 10, line 45)". Actually, the passage at column 10, lines 41 to 45 of Iglesia et al, states "The hydrocarbon synthesis activity and selectivity of evenly impregnated (A) and radially impregnated (B) Co on 2.2 mm SiO_2 spheres were measured in a fixed bed plug flow reactor at 200°C, 2,100 KPa, $H_2/CO=2$, at a space velocity required for 60-65% CO conversion". So, the definition: "60-65 % CO conversion" must not be read in isolation as quite clearly it relates only to the hydrocarbon synthesis activity and selectivity of the hydrocarbon synthesis, Fischer-Tropsch reaction.

Thus, the CO conversion of Iglesia et al is a Fischer-Tropsch reaction ($CO + H_2 \rightarrow C_nH_m$). On the contrary, the conversion percentage of carbon monoxide of the present invention and stated in applicants' claims is the conversion of carbon monoxide into carbon dioxide ($CO + O \rightarrow CO_2$). Therefore, the conversion percentage of the present invention is different from that of Iglesia et al. Further, one of ordinary skill in the art would not foresee the conversion percentage of the present invention from the hydrocarbon synthesis and CO conversion of Fischer-Tropsch reaction of Iglesia et al.

Further, since the rim type catalyst (see column 1, line 43) of Iglesia et al is a supported cobalt catalyst, that is, the cobalt metal is supported on a carrier, Iglesia et al do not suggest the aggregates consisting essentially of iron oxide particles and/or iron oxide hydroxide particles having a specific surface area of not less than 1.0 m^2/cm^3 and an average particle size (D_{50}) of 50 % of a total volume thereof, of up to 8.0 μm as specified in claims 36, 39 and 40. Iglesia et al provides no motivation for preparation of the aggregates of the present invention.

Further, as seen from Experiment 2 in Mr. Matsui's Declaration filed herewith, the conversion of carbon monoxide into carbon dioxide is only 2.1 %, which is considerably inferior to that of the present invention.

Therefore, as seen from Comparative Examples described in the specification, on the basis of the conversion of carbon monoxide into carbon dioxide below 15 % it is unlikely generation of dioxin would not be sufficiently inhibited to be of any value.

Based on the mere single-line mention of "iron" in Iglesia et al, one of ordinary skill in the art would not foresee (i) a iron compound catalyst for inhibiting the generation of dioxin, consisting essentially of iron oxide particles and/or iron oxide hydroxide particles, or (ii) an iron compound catalyst for inhibiting the generation of dioxin, consisting essentially of aggregates consisting essentially of iron oxide particles and/or iron oxide hydroxide particles as disclosed in applicants' specification and defined in their claims.

For the above reasons it is respectfully submitted that claims 33-40, all of the claims in the application, are in condition for allowance. Proper reading of the applied reference together with the comparative data provided demonstrates patentability.

Respectfully submitted,

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